

Listening after the animals: sound and pastoral care in the zoo

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In anthropology and across the humanities and social sciences, zoos have tended to be theorized as places of spectacle. Scholars often focus on the ways in which these institutions enable the viewing of other-than-human animals by human publics. This article, however, uses sound-focused ethnographic fieldwork to engage with two UK zoos and to describe a particular mode of cross-species *listening* which is enacted by zookeepers. The concepts of pastoral care and control discussed by Foucault and applied to the zoo context by Braverman are productively reworked and reorientated in order to understand this form of listening. The article also demonstrates the interconnectedness of keeper, visitor, and animal sound worlds, in the process generating an original perspective that complements and enriches conventional zoo studies.

It is a warm, sunny morning in Paignton. The zoo, one of the main visitor attractions in this southwest English seaside town, opened at 10.00 a.m. but isn't busy yet; just a few family groups are moving along a path that leads up from the main entrance, along the edge of the Asiatic lions' outdoor enclosure and past an area where several owls are on display. One of these owls sits on a high perch. It flits (to human ears) noiselessly onto the branch of a nearby tree, then is still again.

Not everything at the zoo is quiet, however. This morning a lion is roaring very loudly and frequently, so much so that one can't help wondering what might be causing him to roar so much. Is this normal, or is something wrong? What are the keepers, who know the zoo's lions well, making of what they surely must be hearing? After all, the sound can be heard right across the zoo and well beyond its boundaries. The visitors passing by are remarking on it too. A parent exclaims: 'That's the lion. Toby! That's the lion! Can you hear it? Rah!'

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A visit to the zoo is often a strikingly multi-sensory experience. We might just as easily have included, for instance, a vignette about the smell in the Ape House, which we found lingered on our clothes for hours and even days, the warmth and humidity of the Crocodile Swamp exhibit, and/or the feel of the snake skin and cheetah fur biofacts in the Education Centre. Zoos, however, tend to be conceptualized as sites of spectacle, where other-than-human animals (hereafter 'animals') are displayed to be viewed by visitors (e.g. Acampora 2005: 74; Berger 1980: 23; Bishop 2004; Braverman 2011; 2012; 2013: 71-91; Hanson 2002; Malamud 2012: 115-29; 2015: 399-404; Mullan & Marvin 1987).

Malamud points to the asymmetrical power relationships that underpin the optical configuration of zoos (2015: 400). He argues that spectatorship over animals reflects and reproduces a state of human 'power, privilege, isolation and difference from the rest of nature' (2015: 401). Others point to what they identify as the anthropocentric, imperialist, and patriarchal inflection of the zoological gaze, through its association with colonialist expansion and an associated desire to dominate and control (Acampora 2005: 83; Baratay & Hardouin-Fugier 2002: 13). Bishop cautions, though, that zoo spectatorship 'is not a process of monolithic vision'. It is 'filled with multiple frames of reference, multiple means of making sense of the object on display; it produces multi-layered interpretations which continuously unfold' (2004: 108). Studying zoo visitor responses to captive gorillas in Taronga Zoo, she observes that these animals also gaze, and can reflect back the gazes of those who come to look at them, triggering varied responses (2004: 120). Hanson also describes zoos as, among other things, places of encounter, where it is possible not just to gaze upon, but also to meet the gaze of another species (2002: 185). In his photo essay *The animals*, Winogrand (2004) also draws attention to the strangeness and absurdity of mutual interspecies gazing at New York's Central Park Zoo.

The research on which this article is based was conducted between September 2018 and March 2020 as part of a project aiming to draw attention to the complex multi-sensoriality of zoos through a focus on sound. It involved a variety of sound-orientated research activities at two zoos in the southwest of England: Paignton and Bristol.¹ We employed 'phonographic methods', listening carefully to particular sound environments within the zoos, conducting sound walks, and making audio recordings (Gallagher & Prior 2014). We also analysed references to sounds in zoo signage and in the information provided to visitors about particular species, and examined the use of recorded sounds in zoo exhibits. In addition, our multi-layered 'sound ethnography' involved interviews with several keepers from both of the participant zoos, and with other members of staff who had direct contact with animals, such as animal exhibitors, zoo rangers, and members of veterinary teams (Rice 2019). These people had responsibilities for animals from across various taxonomic groups (e.g. mammals, birds, reptiles, amphibians, invertebrates) and were asked about the role of sound and listening in their work. A theme that repeatedly emerged in interviews was the importance of listening in caring for animals. 'Looking after' them often involved 'listening after' them, and it is this practice of 'listening after' which is the focus of the present article.

In her book *Zooland: the institution of captivity*, Braverman describes how, since the 1970s, zoos have increasingly emphasized their contribution to education and conservation (the latter evidenced by, for instance, their participation in captive breeding programmes), as well as their commitment to high animal welfare standards

(2013: 17). At the same time as being exhibited (exposed or presented to the gaze of visitors), therefore, animals in contemporary zoos are also often subject to intense visual monitoring from zoo staff. This monitoring and subsequent or simultaneous record keeping enable the detailed documentation of animal diets, health, reproduction, and so on (2013: 91). Central to Braverman's discussion is Foucault's work on the metaphor of the shepherd in relation to pastoral care (2013: 19–23; see Foucault 2007 [1978]: 115–253). Foucault analysed and developed the popular Christian metaphor of the priest or religious leader as a shepherd: that is, someone who monitors, manages, and generally looks after a flock (of humans). He tells us that '[p]astoral power is a power of care, it *looks after* the flock, it *looks after* the individuals of the flock, it *sees to it* that the sheep do not suffer, it goes in search of those that have strayed off course, and it treats those that are injured' (2007 [1978]: 127, emphasis added). This power is achieved through an intense visual surveillance, one which aims for an awareness of both the whole and the individual: '[T]he shepherd must keep his [or her] eye on all and on each' (2007 [1978]: 128, emphasis added). Braverman acknowledges that surveillance has negative connotations and evokes 'an image of authoritarian control', but her own work, she explains, aims to explore 'an understudied property of panoptic surveillance: surveillance as an instance of the power of care' (2013: 20).

The emphatically visual nature of surveillance as outlined by Foucault and adopted by Braverman is striking. However, scholars have also noted that sound and listening are often involved in surveillance and are used in ways that complement and diversify its visual operation (e.g. Bull & Back 2003: 5; Cardoso 2019; Cusick 2013: 276, 288; Tebbutt 2011). We find auditory surveillance integrated with the visual, too, in the exercise of forms of what might be considered pastoral care. Rice (2003; 2013), for instance, has described the ways in which nurses on hospital wards in England often monitor the sound environment while their visual attention is directed towards other tasks. They listen for indications as to whether medical equipment is working properly or not, to make judgements as to where care is required, and to ensure that interaction on the wards remains orderly. Gallagher (2010; 2011) has explored how sound and listening are used to support the visual surveillance exercised by teachers over primary school children, the panaural accompanying the panoptic. In both these ethnographic contexts, sound and listening can be understood to aid the shepherd figure in 'looking after' – that is, controlling and caring for – their charges. It facilitates the work of herding the 'flock' towards a desired goal, namely the achievement of health or education through the management of conducive, disciplined environments for treatment and learning, respectively.

Rice and Gallagher both focus on contexts in which surveillance is orientated towards the care and control of groups of humans, but one arena where sound features prominently in the surveillance of other animals is, coincidentally, that of shepherding, which has received some coverage in the ethnographic record. For example, in his work with Greek shepherds whose flocks contain sheep and/or goats, Panopoulos describes how bells hung around the necks of some animals assist shepherds in the care of their charges:

Bells allow shepherds to collect information about the movement of their animals and other shepherds' flocks, without having to see them. On many occasions, while I was with a shepherd inside his small storage shed, he would suddenly go out to his flock grazing nearby. Upon his return, he would explain to me that he had heard his flock going astray and he had had to go and check. Listening to the sound of bells, shepherds can gather their animals more easily every morning, in order to milk them

and 'keep an ear' on them. Although they did not hang bells on all of their animals, they always did so in the case of those more inclined to stray ... Each flock also has its own sound identity. A shepherd can easily tell if a certain bell, and hence animal, is missing or not (2003: 643).

The auditory surveillance exercised by shepherds is of a direct and literal kind. Braverman's work on panoptic surveillance in the zoo, however, spans a spectrum of 'literalness'. Seeing animals, containing them in enclosures designed to allow optimum viewing conditions, controlling when and how they eat, interact socially, and reproduce, and the direct recognition of individuals by name all represent a kind of elementary surveillance. The network of North American zoos that forms the wider context for Braverman's ethnographic reflections on the zoo at Buffalo, however, also manages data on a grand scale through sophisticated information systems (Braverman 2013: 92–4). The ostensibly prosaic listening of shepherds (and, as we will see, of zookeepers) might seem distant from these grand mechanisms of 'dataveillance' (Clarke 1988). 'Keeping an ear' on their animals does, however, allow them to engage in a kind of surveillance that, going some small way towards the big data of Braverman's multi-zoo cooperation, is sustained but diffuse. It might be described as indirect and almost passive, allowing them to be elsewhere and otherwise occupied, while simultaneously gathering information and monitoring the well-being of their flock, herd, troop, or whatever the appropriate collective nouns for the species in their care might be.

The two most crucial aspects of the Foucauldian analysis which Braverman utilizes and which, in turn, are of most use to us here, then, are: (a) that the metaphor of pastoralism needn't be so metaphorical for it to be insightful (it can be usefully applied to the actual surveillance of other animals); and (b) that surveillance is centrally involved in the provision and exercise of care. In this article, we expand on Braverman's work by examining the particularities of 'listening after', or connections between listening and caring for animals in the zoo context. Our specific focus is the listening of zookeepers; however, we also explore some of the ways in which other listeners, such as zoo visitors but also some captive animals, are sonically entangled. Indeed, we emphasize the distributed nature of auditory surveillance and the pastoral care that it facilitates. We also consider how diverse auditory registers and forms of both sounding and listening can exceed, resist, or by-pass regimes of surveillance, broadening the sonic parameters for acts of listening after.

This article can be understood as both a product of and a contribution to the unfolding animal or 'species turn' in anthropology and in the social sciences and humanities more generally (Kirksey & Helmreich 2010: 549). Influenced by ideas from post-humanist philosophy (e.g. Deleuze & Guattari 1987; Haraway 2003), science and technology studies (e.g. Latour 1999), and environmental humanities that draw attention to the interconnectedness and interdependency of the human and the other-than-human, it explores some of the ways in which human and animal lives become entwined in the zoo, a key zone of 'interspecies contact' in many contemporary societies (Buller 2014: 314).

The article focuses on sound as an important medium within which species mingle and the specificities of human and animal lives are co-produced. As such it also contributes to a growing anthropological literature on sound and sonic relations (e.g. Cox 2017; Feld 1990; 1996; Helmreich 2007; 2010; Rice 2013; Samuels, Meintjes, Ochoa & Porcello 2010; Schulze 2018). Some work from anthropology's auditory turn has explored ways in which humans in various cultural contexts listen to and interpret

the sounds of other animals (e.g. Feld 1990; Menezes Bastos 2013; Whitehouse 2015). In his classic ethnography on the Kaluli of Bosavi, Papua New Guinea, for example, Feld (1990) describes how members of this group display a sophisticated knowledge of the calls and songs of local birds. He suggests that knowledge of these sounds, as well as of others occurring in the densely rainforested environment, constitutes part of a particular Kaluli 'acoustemology', or acoustic 'way of knowing' (1996: 96-8; 2015: 12). The present article begins to open up an acoustemology of the zoo, and specifically that exercised by zookeepers. At the same time, it extends acoustemology beyond the human, emphasizing the agency that some animals possess and exercise, not only in their co-creation of the sonic environment of the zoo, but also in their responses to the heard presences of other human and nonhuman actors within it. Calling for 'expanded listening' in the social sciences, Gallagher, Kanngieser, and Prior identify a need 'to work outwards from the dominant anthropocentric understanding of listening' (2017: 618). They draw attention to the ways in which bodies of all kinds, human and other-than-human, are responsive to sound and resonate with it. Our research suggests that there are always multiple, simultaneous listening subjects at work in the zoo. Animals play an important role in shaping and maintaining an interspecies network of auditory attention that sustains and directs care in that setting.

Unconscious listening

For one interview, we arranged to meet a keeper at the entrance to Bristol Zoo's Monkey Jungle exhibit. After introductions, he unlocked a gate and led the way up a set of metal steps, along a short corridor and into a tiny office containing a couple of chairs, a computer, and a desk covered in paperwork. The window looked out into a walkthrough enclosure for a group of ring-tailed lemurs (*Lemur catta*). One of them was lying on the window ledge, asleep in the morning sun.

As the conversation unfolded, the keeper readily acknowledged the importance of sound and listening in his work. Indeed, during our conversation we were periodically interrupted by sounds from along the corridor. The keeper explained that the corridor led to the off-show areas for the zoo's macaques (*Macaca silenus*) and spider monkeys (*Ateles hybridus*). These areas, which allowed the primates respite from the gaze of the visiting public and were useful for the keepers in conducting care work such as health checks, were adjacent to one another and the two species would occasionally antagonize each other or, as he put it, 'wind each other up'. At the same time, two of the spider monkeys, both female, had been hand-reared by other zoos and so, he explained, were 'not very confident at being spider monkeys'. They sometimes made alarm calls, often when the males in their current enclosure, who had not had the same upbringing, began to express sexual interest in them.

At one point a peculiar noise came from down the corridor:

What was that?

That's the happy noise from the spider monkeys.

OK.

That's the kissy-face noise [*half-laugh*].

So you take that as a sign that everything's working OK there?

Yes, all nice and calm over there at the minute.

Later, there was another noise, this time a metallic sound from the off-show area. The keeper set off quickly down the corridor, explaining that it was particularly important to investigate such sounds as these might be produced by animals fiddling with catches

or other parts of their enclosures. On this occasion, the noise appeared to have been caused by one of the monkeys having dropped a small piece of enrichment equipment onto a metal part of the enclosure structure.

During a later project interview, another zoo staff member also referred to listening from the office, keeping an ear out for the animals nearby: 'Our office is within the shed where animals are. You're always aware of what the normal vocalizations of your animals are, and if you hear something that's a little bit out of the ordinary, obviously you get out of the office and go and see what's going on.'

There are clear similarities here between the keepers' listening and the listening of the shepherds described by Panopoulos (2003). Both listen at a distance when keeping the animals in view is difficult. Structures such as the office or shed impose visual restrictions for the keeper just as the hut does for the shepherd. (Keepers can access CCTV feeds for some species, but screens and recordings tend to be monitored at particular times or for particular behaviours such as breeding.) Certain sounds might indicate that all is well, while others invite subsequent visual scrutiny and potentially also action to intervene. The shepherd, of course, is often concerned with ascertaining the location and movement of his sheep or goats, especially those most inclined to stray. The keepers do not have quite the same concern with the spatial location of their animals. Their charges are captive and so are unlikely to move from their allocated areas of the zoo, though one zoo staff member did explain that sound was sometimes useful when trying to locate the ring-tailed lemurs within their large walkthrough enclosure. The haste to investigate what had made the metallic sound mentioned above also shows that zookeepers, like shepherds, must be aware of when their charges are testing the limits of their constraint.

The zookeepers' auditory surveillance (and that of the Greek shepherds) might be described as what Pinch and Bijsterveld call 'monitory listening', which they argue is a type or 'mode' of auditory attention used to determine whether something is wrong (2012: 14). Monitory listening has also been identified in the work of, for instance, car mechanics (Krebs 2012), and scientific researchers testing sonified data (Supper 2012). It is a ubiquitous form of listening, familiar to most people who have ever had to take responsibility for a young child, dog, or complicated piece of machinery, for instance.

The keepers to whom we spoke had built up familiarity with a variety of sonic conditions as part of their work. They knew the institutional routines and how these corresponded to repertoires of sounds typically produced by the animals in each enclosure. Phrases such as '[y]ou're always aware of what the normal vocalizations of your animals are' and 'if you hear something that's a little bit out of the ordinary' reflect an ambient kind of sensitivity which is not the intrusive, active surveillance often associated with the gazing eye that scrutinizes all behaviour, benign or otherwise. The keepers' auditory surveillance is lighter, broader, and more selective. It also differs from a keeper's intentioned scrutiny of a CCTV feed. One staff member explained that sounds that provoked action didn't emerge out of silence: '[T]here's always noise going on, and you know those noises; you're used to those noises at a certain time or in a certain situation. And I think, like, it's very subconscious, in a way'. The keepers have learned what sounds can settle behind their immediate attention so that monitory listening is generally presented as non-conscious work. As a sensitivity to breakages and irregularities, it is when there is a problem and 'the world announces itself' that monitory listening completes its purpose (Heidegger 2001 [1927]: 105).

Listening as a mode of care

In one interview we conducted, a vet provided an unprompted answer to the questions posed at the start of the article in relation to the lion's roaring:

They'll [keepers] often tell us if they think something's not quite right, if an animal is a bit quiet, is perhaps not interacting as it usually would, maybe not feeding or dominating a food resource, and then we can go and take a look at them and discuss it more if they have concerns. So, the lions [*Panthera leo persica*], especially the male lion, I would say he's vocal normally, so perhaps if he became less vocal it might be a sound, a sign that he was unwell.

This vet also pointed out that the zoo's gibbons (*Hylobates lar*) were 'naturally very vocal' and that their vocalizing less might indicate that they were feeling 'below par'. For zookeepers, then, problems are sometimes indicated by an absence of sound. Another keeper responsible for amphibians was asked: 'If you were to walk into the Amphibian Ark and it was silent, would that ...?' She cut in, 'Yeah, that would worry you. You'd be like, "Ah, something's not right." If some of the frogs weren't calling, and they call every single day, you'd be like, "Oh, what's going on? Are the temperatures wrong?"' In these cases, 'quiet' brings about a breakage in the non-conscious, passive 'listening after', instigating a response.

One group of sounds commonly mentioned by the keepers were alarm calls. For instance, the keeper we interviewed near the off-show area for the spider monkeys explained how,

[i]f they feel scared or worried, they'll make alarm calls, which are very distinct and obvious [compared] to the other noises they'll make, and then you'll know that something's going on that they're upset by; you can go over and check they're OK, and if you can do anything to help calm them down a little bit.

Some alarm calls were not thought to indicate serious problems, but others demanded attention. It is this kind of direct interaction and intervention, triggered through listening and a capacity to discriminate between different kinds of animal sound, which perhaps most easily allows us to conceptualize auditory surveillance as a mode of care. The listening is explicitly involved in the initiation of a response and the direction of assistance. At the same time, in making alarm calls, for instance, the zoo animals themselves are active in expressing their own discontent; it is they who proactively break the norm. Whether addressing their keepers directly, or communicating with each other with the keepers overhearing, they stimulate the attention of their keepers and galvanize action from them. Drawing on Latourian notions of agency (e.g. Latour 1999: 180), animals can therefore be understood to participate in the mobilization and enactment of pastoral care, a point we explore in more detail below.

The auditory awareness which keepers display represents part of a particular acoustic way of knowing and understanding the space of the zoo and the captive animals that inhabit it. It is an aspect of the keepers' 'acoustemology' (Feld 1996). Although it might seem to operate in a somewhat automatic manner, this auditory awareness is by no means affectively disengaged. Indeed, it is imbued with a strong sense of responsibility and is frequently accompanied by worry and concern. One keeper told us that although he felt the public often thought of zookeeping as an enjoyable and rewarding job, it carried 'massive responsibility'. The animals represented valuable financial assets for zoos, as people paid to come and see them. Some were very important in genetic terms, too. If one of them were to die, he said, the keeper might well be blamed. As a result, keepers had to be very highly attuned to their animals and alert for even

the subtlest signs that something might be amiss. Several keepers also explained that they felt affection and concern for the animals in their charge. They cared *about*, as well as *for*, them. Van Dooren writes that whilst being a form of ‘practical labour’ involving concrete actions, caring is also an ‘affective state’ (2014: 291; following Puig de la Bellacasa 2012: 197). ‘[T]o care is to be affected by another: to be emotionally at stake in them in some way’ (van Dooren 2014: 291). Listening can be understood as a form of practical labour, but in their application of this sensory skill keepers reveal that they are also affectively involved in the lives of their charges.

Of course, the keepers’ care-full way of listening is peculiar to the discipline of being a zookeeper, a discipline which itself arises within the particular institutional context that the zoo represents, and which relates to the purposes and aims of that institution. As Braverman indicates, zoos increasingly stress their role in education and conservation. In its mission statement, Paignton Zoo is described as ‘an education, scientific and conservation charity dedicated to protecting our global wildlife heritage and inspiring in people a respect for animals, plants and the environment’ (Wild Planet Trust n.d.). Bristol Zoo declares an aim ‘to save wildlife through conservation action and engaging people with the natural world’ (Bristol Zoological Society n.d.). The two zoos are involved in *in situ* conservation projects and play an active role in research and fundraising which supports those projects. They are also involved in captive breeding programmes for some endangered species. As such, keepers’ listening skills are often orientated towards securing the future viability of species ‘flocks’ within the zoo’s own collection, and, by extension, within captive populations across zoo networks and within *in situ* populations. As much as it is a personal sensory discipline, the keeper’s listening represents the orientation of audition to align with the institution’s wider pastoral goals. It is a sensory extension (but also an embodiment and enactment) of an institutional duty and power of care.

Listening after visitors

The keeper we interviewed in the office down the corridor from the macaque and spider monkey off-show enclosures mentioned another advantage of listening in his work:

It is useful for knowing when the public are doing something wrong as well. You can hear somebody bang on the glass from here, so you can go down to tell them off, that kind of thing.

What do you say to them when that happens?

‘Would you like it if somebody came and knocked on your window? [chuckles] ... You’d find it quite irritating.’ It depends how annoying they’re being and how conciliatory they look after you’ve told them to stop.

Another staff member described the lemur enclosure as being sonically problematic: ‘Because it’s a walkthrough, if guests come in and are making quite a lot of noise, that can potentially disturb the lemurs, so we just have to make sure the noise levels are OK from the guests’ side as well’.

While often conceptualized as visually orientated, zoo visiting, because it is a social activity, can sometimes be noisy. Indeed, it is frequently human (rather than animal) sound that is most obvious (to human ears) when visiting a zoo. One can easily imagine a group of zoo visitors by turns exclaiming, commenting, appreciating, discussing, explaining, reading aloud from signage, and so on. From children in particular there might be shrieks of excitement, calls to other children, adults, and even animals. The ‘zoological gaze’ can be noisy (Franklin 1999: 62). Many of our interviewees said they believed zoo animals were generally ‘desensitized’, ‘used to’, or ‘acclimatized to’ visitor



Figure 1. Sign on a vivarium at Bristol Zoo. (Photograph by the first author, reproduced with permission.)

noise (indeed, news reports have quoted staff at various zoos claiming that some animals were unsettled by the quiet resulting from the Covid-19 lockdown closures). In a further expression of the complexities of sonic pastoral care, one zoo staff member we spoke to suggested that loud expressions of excitement on the part of children might be welcome as an indication that the zoo was succeeding in getting them interested in and engaged with the animals. It was well recognized by keepers we interviewed, however, that some species were very sound-sensitive and that sudden, loud, and unfamiliar sounds could affect them. Animals on display in zoos can often hide from the visual gaze of visitors. The nature of captivity and of sound, however, makes it difficult for them to escape from sonic disturbances altogether.

Visitors tapping on the glass of enclosures emerged as a particular source of irritation and even exasperation for keepers. They recognized that it frightened and disturbed some animals and was sometimes a deliberate attempt on the part of visitors to provoke or get a reaction out of the animals.² During our research, we noticed many signs requesting visitors not to tap or knock on the glass (see Fig. 1 and, perhaps more revealingly, Fig. 2).

The presence of visitors in the zoo adds an interesting complexity to keepers' listening. Their auditory surveillance is directed not just towards the animals, but towards visitors, too. By discouraging the latter from banging on the glass, keepers are arguably working to foster what they regard as appropriate sonic relationships between visitors and animals.

Some zoo signs requested quiet while giving explanations as to the auditory sensitivities of animals and the adverse effects that visitor noise might have. A notice at the Ape Centre exhibit at Paignton Zoo, for example, was written as if from the animals' sonic perspective and was ventriloquizing or speaking on their behalf



Figure 2. Sign from the Hatching Hut, Bristol Zoo. (Photograph by the first author, reproduced with permission.)

(see Fig. 3). Inside, another sign stuck to the glass of the gorilla enclosure underlined the importance of sonic care (see Fig. 4). We noticed the following sign on one of Bristol Zoo's aviaries: 'Sssshhhh, please. It is the breeding season for our Sumatran laughing thrushes and they are sensitive to disturbance. Enjoy watching them quietly'. Zoo staff, then, seem to be trying to instil in visitors an appropriate sonic 'interspecies etiquette', and to make them more responsible and considerate 'sonic citizens' in the multispecies community that the zoo represents (Kim 2016; Warkentin 2010).

As discussed above, Braverman regards zoos as institutions that seek to care for animals. This involves training not only their staff (including keepers) to care, but also their visitors. The aim of galvanizing visitors to care, Braverman argues, is pursued in a variety of ways. For instance, zoos encourage visitors to see the animals as interesting, exciting, beautiful, or otherwise valuable and worth looking after.

By inspiring their visitors to care for wildlife, zoos also delegate their own power of care to the public. And as care by zoos is bestowed upon both individual animals and the flock, the public, too, is educated to care for both the single animal subject and the entire flock. Human zoogoers are thus disciplined by the zoo's institutional gaze to become caregivers – or, in Foucauldian terms, shepherds (Braverman 2013: 90).

By encouraging visitors to be mindful of how their sonic presence might affect animals, zoo staff are also shepherding them whilst educating them to be better (more empathetic and respectful) shepherds themselves. There is a sense in which the animals become the visitor's charges (an idea we see literalized using the trope of adoption in 'animal adoption' schemes), while at the same time the visitors are the keepers' charges. Signage such as that shown above can be understood not only as a way of caring for animals by surveilling visitors, but also as a means of training visitors to care for animals by

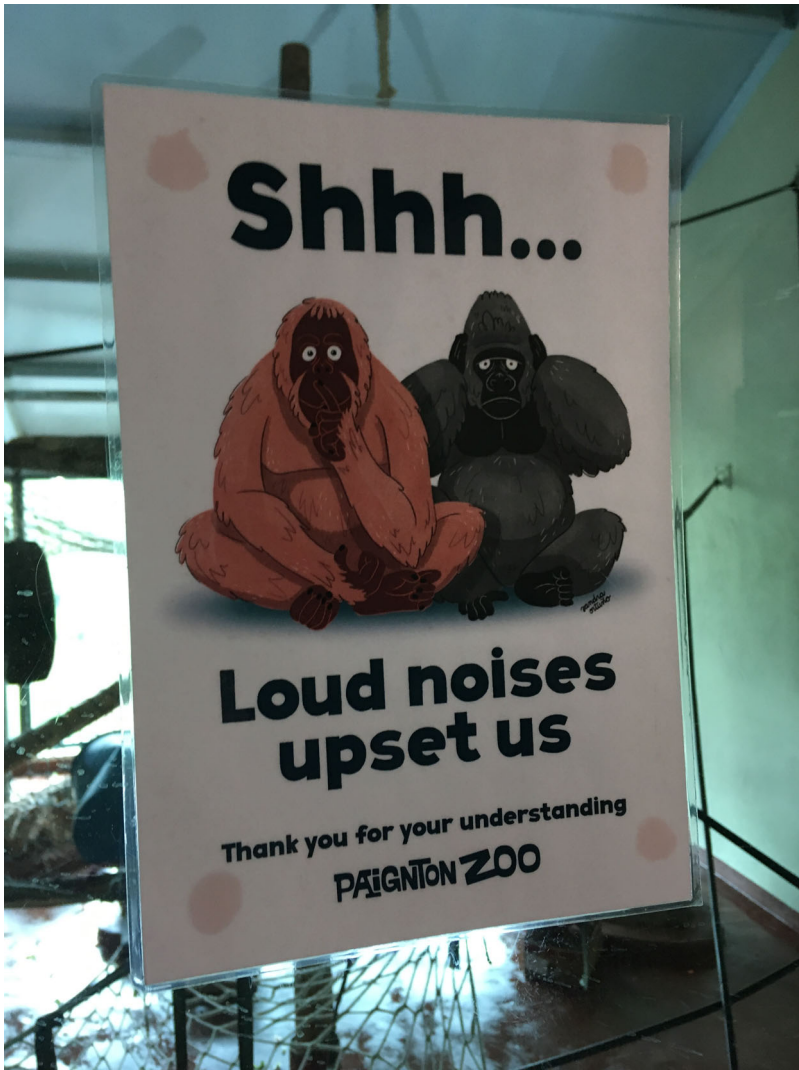


Figure 3. Notice at the Ape Centre exhibit, Paignton Zoo. (Photograph by the first author, reproduced with permission.)

exercising self-surveillance, monitoring their own (in this case sonic) behaviours and perhaps those of other members of the public in the interests of the animals. The zoo attempts to enlist the noise-making public in its sonic pastoral care. This effort becomes inscribed (in the form of signs) on the fabric of the zoo itself. The zookeeper's agency is distributed through signs as material and semiotic forms, or, rather, these are enlisted by zoo staff into the enactment of care.

Of course, zoos often send somewhat self-contradictory messages about the need for visitors to monitor their own sounds. They do not have the same heritage of disciplined quiet as educational settings such as the school or museum, or spaces of spiritual activity and reflection such as the church. Although they have traditionally had a role as places

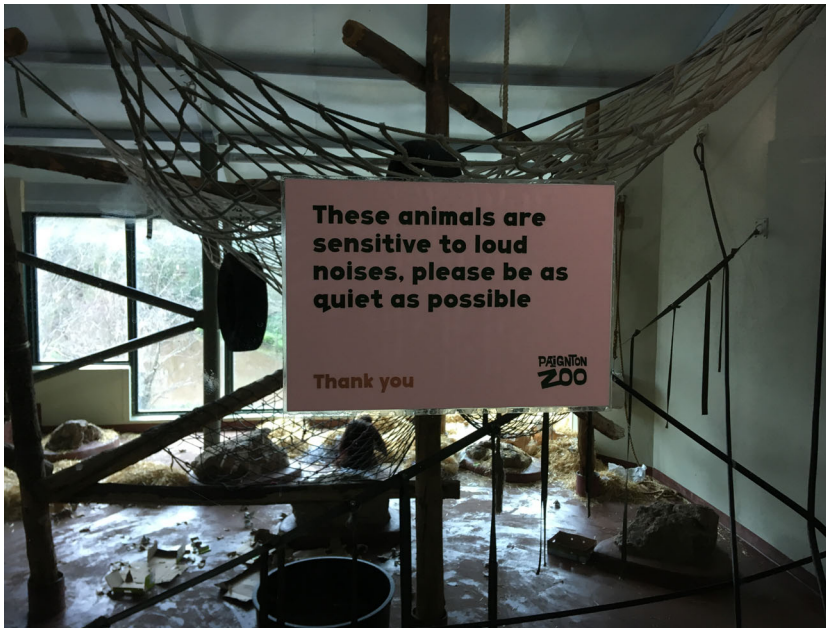


Figure 4. Notice on the gorilla enclosure, Paignton Zoo. (Photograph by the first author, reproduced with permission.)

of education (and many emphasize their continuing commitment to this role), zoos are also associated with entertainment, and this function is often obvious in their architecture, in the activities they offer, and hence in their acoustic character. They provide facilities that are conducive to noise such as fairground attractions (Paignton, for instance, has a train track with tooting engines and miniature carriages for visitors to ride on), playgrounds, outdoor cafés, and even outdoor music events, at the same time as requesting quiet from visitors. The examples of signage presented above do, however, emphasize the importance of visitors maintaining quiet at least when in *close proximity* to some zoo animals.

Animals as participants in ‘listening after’

In the extract from Panopoulos (2003: 643) quoted above, the sheep or goats guarded by Greek shepherds can be considered to participate in their own auditory surveillance. It is, after all, the bells ringing as an index of their movement that send sonically intelligible signals to the shepherds. Bleating if threatened or in distress, and the sudden change in the sounds of their bells as they move away from perceived danger, might even be considered intentioned appeals for human assistance. Regardless of intentionality, though, we can still understand the flocks and the individual animals of which they are made up to be participants in the operation of their own auditory surveillance. Through their various calls and vocalizations as well as other audible behaviours, and even through their silences, captive animal species at the zoo also provide information that makes auditory surveillance useful and effective as a pastoral technique. They become active in the instigation and continuity of their own pastoral care and can, to an extent, influence its intensity.

Panopoulos describes how, having heard them going astray, shepherds would suddenly go out to check on their flocks (2003: 643). The animals' bells summoned the shepherd, successfully eliciting a response. Through sound, then, the surveilled animals can be understood to enact a degree of reciprocal surveillance over the shepherd. Zoo animal vocalizations and silences also function to surveil their keepers, reminding them of their responsibilities and reinforcing their participation in institutional regimes of care. We might ask to what extent some zoo animal sounds are deliberately directed at catching the attention and attracting the intervention of keepers. Several staff explained that some animals were aware of when, for example, feeding time was approaching, and would vocalize (among other behaviours) in anticipation. Perhaps we can understand them to be deliberately appealing to their keepers to hurry up, not overlook (or 'under-hear') them, and so on. In a similar way, it seems plausible that the hand-reared female spider monkeys mentioned earlier were vocally appealing for attention from their keepers in response to the actions of the non-hand-reared male spider monkeys with whom they were learning to cohabit.

The keepers were aware, too, that many animals were actively involved in forms of 'listening after', both as individual animals and as members of the groups of conspecifics of which they were a part. There was variation in the hearing ranges and sensitivities of different species (and indeed of individual animals), but most were actively attending to their environment, however that might be construed. (In the case of small amphibians, their environment might only extend to the vivarium in which they were kept and perhaps its immediate surroundings, but mammals were recognized to have a highly developed sense of hearing and to be able to hear within and considerably beyond their enclosures.) Primates in particular quickly detected and responded to sounds, and were known to be good at recognizing the pace and direction of the keepers' footsteps (keepers often wore rubber boots and walked more quickly and purposefully around the zoo than visitors did), the jangle of keys, the clank of buckets, and other auditory signs that feeding or other interaction was imminent.

One of our team accompanied a member of Paignton Zoo's night security staff on his rounds in the very early hours of the morning. As the two began their tour and stood at the main entrance, a loud alarm sound issued forth. The night security man said that this was an 'alarm bird'. Initially, our team member assumed he meant that the sound was a mechanical one, but the security man later clarified that it was indeed a bird. The sound, he said, meant that 'everyone knows we're here', inferring that this bird had communicated their presence to the captive populations as a whole, or at least those housed near the zoo entrance. The suggestion that these animals would have heard the alarm bird implied that they were 'listening out' for potential threats or were more generally gathering information as to what was going on in their surroundings. The flamingos (*Phoenicopterus chilensis*) gave a loud chorus of alarm calls when they detected the presence of the two men in the dark, and later the zoo's troop of baboons (*Papio hamadryas*) sent up an alarm chorus when they became aware of the pair nearby. Members of the zoo's catering services, who often left the zoo late at night after clearing up after events such as conferences and weddings, also described the loud flamingo and baboon choruses that occurred when the animals realized there were humans in the vicinity. The intertwining of listening and care, then, can be observed at an intraspecies and even an interspecies level among certain animals in the zoo.

Bioacoustical research suggests that some animals, especially prey species, tune in to the 'public information' available from the sounds provided by other species that occupy their habitats (e.g. Phelps, Rand & Ryan 2007). This is perhaps most obviously the case with alarm calls, and Magrath, Haff, Fallow, and Radford state that eavesdropping on these is 'an important source of information for many species across the globe' (2015: 560). Research has also indicated that some animals use non-alarm calls from other species as a source of information. Eastern grey squirrels (*Sciurus carolinensis*), for instance, have been found to treat 'bird chatter' (contact calls emitted by multiple individuals when not under threat of predation) as an indicator of safety (Lilly, Lucire & Tarvin 2019: 1). They are responsive to changes or breaches in that sound, suggesting a mode of listening akin to the monitory listening of keepers. During visits to the participant zoos, we witnessed how a loud burst of sound from one enclosure could cause animals *nearby* to become alert and vigilant and even to send up alarm calls of their own, suggesting that they, too, practise a form of monitory listening and are (often vocally) responsive to breaches or changes in their normal sonic environment. As one keeper at Bristol Zoo put it: 'If the macaws do their alarm call, then that triggers the lemurs, that triggers the meerkats; it triggers everything'. Of course, some species hear and vocalize at frequencies and volumes that humans are unable or only partially able to perceive. The full extent of their sonic interactions might not be perceptible to the keepers. Those calls which are audible, however, have the effect of providing sonic information so that the animals producing them once again become part of a mechanism of auditory surveillance that is diffuse and distributed not only between humans but also across species. At the same time, the calls facilitate and enhance the pastoral care of zoo animals that keepers enact through listening.

Although the distribution of power between humans and animals is in no way even (given the fact that many zoo animals are entirely dependent upon their human keepers for their continued existence), auditory surveillance is nonetheless to some extent co-constituted and co-produced in the zoo. It emerges as a distributed and collaborative interspecies technique. There is therefore a reciprocity or mutuality of listening and sounding that complicates and enriches Braverman's more unidirectional presentation of the pastoral care of zoo animals by humans. Perhaps her visual imagination of the zoo makes it harder to perceive the varied opportunities for mutual entanglement at a range of proximities (and between a variety of species) that are created by the dispersed spatiality of sound. Above, we introduced the concept of acoustemology and described its relevance to zookeeper listening. In exploring the zoo as a sound world, we can extend acoustemology beyond keepers to a variety of animal groups and individuals and can indicate points at which human and animal acoustemologies overlap, intersect, and become relevant to one another. Practices of 'listening after' in the zoo are one such juncture and suggest potential for fruitful crossover between anthropological and bioacoustical research.

Visitor listening and the pastoral

At the opening of this article, we described the loud and repeated roaring of a lion at Paignton Zoo. We also explained that this roaring was considered normal behaviour by staff who knew the lion, and that they would have regarded quietness on the animal's part as more of a concern. Visitors, however, were listening to the lion, too. We described a parent asking her child if he could hear it, drawing his attention to the distinctive

sound of which she then provided the familiar, stylized imitation: 'Rah!' In some ways, her response might seem superficial. We don't find a verbalized consideration, for instance, of why the animal might be exhibiting this behaviour, or of what he might be experiencing. We merely find a restatement of the roar as an icon of the lion. Following Braverman, however, we can understand the parent's comments in a different way. She might be regarded as a visitor who has been trained by the zoo, if not to care about the animals there (and by extension in the wild) herself, then to care that young children care (or at least one young child does so). We might understand her appeal for the child to hear and appreciate the roar as an effort to spark his interest, to get him to appreciate, perhaps, the power of the lion producing it and ultimately to consider this animal, its wild counterparts, and animals more generally to be valuable and worth caring for. She can perhaps be said to have internalized the pastoral mission of the zoo and is, knowingly or not, at the edge of the production of a further disciplined subject. The parent's listening seems to have little similarity to that of the keepers 'listening after'. Yet her listening and encouraging the child to listen can be considered part of the wider pastoral mission of caring for animals that Braverman regards as so central to the ethos of many modern zoos.

There are a variety of ways in which zoos use sound to provide information and craft experiences that develop visitor consciousness about their animals (and once again, by extension, those in the wild). For instance, during the listening walks conducted during our research, we noticed that audio is often used to provide atmosphere around enclosures or sometimes inside them, to produce a sense of immersion in a 'wild' or at least different space, and to allude to, if not re-create, the 'natural' habitat of the animals on display. Specific genres of music might be broadcast near enclosures to forge associations with a particular geographical area, or just to evoke a generally distant or exotic locale. In the viewing area of a seal exhibit at Bristol Zoo, for instance, we heard slow, ambient music of a genre that has come to be associated with underwater scenes in TV and film. It seemed to be used to convey or enhance a sense of having access to an underwater world. Exhibit sound environments were also manufactured through the species or combinations of species they housed. Enclosures such as a walkthrough aviary at Paignton Zoo, for instance, were busy with the calls of numerous birds from many different species. The busy-ness of a sound environment like this might be experienced by visitors as in itself exciting and interesting, conveying a sense of the profusion of life that is to be found both within the exhibit and in various 'natural' habitats.

In addition to the above uses of sound, the participant zoos provided information about some of the sounds made by their animals. For instance:

Did you know? The roaring of the howler monkey [*Alouatta caraya*] winds up to a booming, echoing sound which is useful as a means of contact as well as to maintain its territory.

Did you know? The daily duet between gibbons is thought to play an important part in holding the family together, as well as defending the territory in which it lives.

Text panels like these directed visitors' attention to particular sonic markers which reify one aspect of a species' acoustemology into a sonic signifier for that species.

At an aviary housing azure winged magpies (*Cyanopica cyanus*) at Bristol Zoo, visitors were encouraged to '[s]pend a few moments listening to how they communicate using whistles and trills', while at a white-naped pheasant pigeon (*Otidiphaps aruensis*) enclosure visitors were advised: 'Listen carefully and you may hear our pigeons call.'

They make long whistling calls and whirling sounds similar to a plane's propeller'. The information on the Victoria crowned pigeon (*Goura victoria*) in the Forest of Birds exhibit at Bristol Zoo included the following: 'You can make a call like a crowned pigeon by blowing over the top of a milk bottle. As you are walking around you may also hear a louder booming call that helps the pigeons stay in touch with their flock when feeding'. Here visitors are invited to consider one of the crowned pigeon noises as being like a mechanical sound. Listening, then, is integral to many of the zoos' attempts to forge interspecies (and specifically human-animal) entanglements. Directions such as those detailed above position sounds as fulcra around which entertainment and education hinge. They also lend a paradoxical permanence or durability to the fleeting and transient character of sonic experience, and orientate visitors sonically, telling them what to listen for and, by implication, what to tune out. No mention is made, for instance, of the sound of the air-conditioning unit in the Forest of Birds, or of the other sound techniques or communicative apparatus of the species there.

The ways of listening invoked in these examples seem very different from the 'listening after' that we have seen practised by zookeepers. They are not obviously concerned with the pastoral care of the animals in question, yet they can nonetheless be linked to the wider zoo mission of education and entertainment and are a particular sensory channel through which people, especially children, can be encouraged to care about, if not directly for, animals. As such, they represent a further set of sonic avenues for the elicitation, distribution, and diversification of pastoral care in the zoo context.

Returning once again to the parent and her 'Rah!' in imitation of the lion for the benefit of her child, she is of course referring to a particular lion, but the association between this sound and lions in general is continually reaffirmed in popular culture forms such as Disney movies, children's books, and natural history programming aimed at children, much of which also contains messages about the value of lions and other wildlife and the importance of their conservation. (The Disney movie *Madagascar* is specifically name-checked at the ring-tailed lemur enclosure at Paignton Zoo.) The involvement of sound and listening in the pastoral care of animals, then, may be pronounced in the zoo, but is also evident in related cultural spheres which interact with and influence the practices of zoos.

Conclusion

We close by placing emphasis on a further element of reciprocity that emerges from our consideration of sound and listening and which again enlarges upon Braverman's analysis of pastoral care in the zoo. In some contexts where humans are responsible for ensuring the well-being of nonhuman charges, care can be regarded as a mutual or even symbiotic practice (Coulter 2016: 202-5; Hurn & Badman-King 2019: 150-3). Animals may provide care to their human carers through what Coulter refers to as 'voluntary work' (2016: 202). This term is used to account for action voluntarily undertaken by animals to benefit others (e.g. a companion dog who comforts a distressed human). Perhaps we can employ the term 'unconscious care', however, to account for a phenomenon that emerged from our conversations, but which can also be observed in some interactions between visitors and individual zoo animals (see Reed 2017). As highlighted by the literature around animal-assisted interventions (Bell, Westley, Lovell & Wheeler 2018; Dashper, Danby & Finkel 2019; Kruger & Serpell 2010), the simple act of being in the presence of other animals can produce feelings of pleasure, comfort, and related affective states for humans. One keeper, for example,

commented that ‘obviously, there’s an enjoyment side to [listening] as well; it’s nice to walk through the zoo and hear those sounds and noises. You know, one of my favourite sounds is hearing the gibbons in the morning singing. It’s just lovely’. Several other keepers referred to this sound as one that was especially distinctive of the zoo and which they took pleasure and pride in hearing. Of course, in a UK context, ‘natural sounds’ such as whale song, rainforest sounds, and dawn choruses are often considered to be relaxing, calming, and generally therapeutic. In a similar way, listening to zoo animals (this time not in a monitory mode, but one directed towards pleasure or enjoyment) was felt by keepers to trigger positive states, facilitating self-care but also affirming and re-energizing their work of caring for animals.

There are also links between listening in the pastoral care of zoo animals and listening at the larger scale of care for entire habitats. A growing body of work across a variety of related fields (such as acoustic ecology, bioacoustics, and soundscape studies, but also wildlife sound recording, sound art, audio composition, and audio documentary) explores how human actions are affecting the sonic quality and complexity of a variety of biomes. Animal sounds and polyphonies are shown to have been reduced, degraded, or silenced altogether, for instance through species loss and habitat destruction, while anthropogenic noise pollution becomes increasingly widespread. This work presents ways of acoustically monitoring the health of Anthropocene ecosystems, while often also underscoring the importance of sound to animal lives, as well as the importance of animal sounds to human welfare. At the same time, implicitly or explicitly, it seeks to galvanize humans to take on more active and responsible roles in the pastoral care of other species. Obviously, in a zoo context, ‘natural’ sonic ecosystems are compromised; the zoo is a complex bioacoustic nexus of species sounds from diverse global habitats, including native English species’ sonic expressions and mechanically reproduced and choreographed soundscapes. Through their declared conservation missions, though, the zoos in which our research took place also add a global dimension or scale to listening after as an act of pastoral care.

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² The question of whether, for some species, bangs and taps at the window are perceived as auditory rather than tactile sensations is an important one which there is not space to explore in detail here. For particular species, it is perhaps more appropriate to think in terms of ‘vibration’, moving beyond a limited definition of the auditory (see Friedner & Helmreich 2012; Helmreich 2010).

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Entendre les animaux : son et soins pastoraux au zoo

Résumé

L'anthropologie, comme les autres sciences humaines et sociales, théorise souvent les zoos comme des lieux de spectacle. Beaucoup de chercheurs s'intéressent à la manière dont ces établissements permettent à des visiteurs humains d'observer des animaux autres qu'humains. Le présent article s'appuie quant à

lui sur un travail ethnographique de terrain axé sur le son pour décrire le mode particulier d'écoute interspécifique pratiqué par le personnel de deux zoos du Royaume-Uni. Les concepts de soin et de pouvoir pastoraux, exposés par Foucault et mis en pratique dans le contexte du zoo par Bravermann, sont revisités de façon productive et réorientés de façon à éclairer cette forme d'écoute. L'article met en évidence les interconnexions entre les univers sonores des soigneurs, des visiteurs et des animaux, créant ainsi un point de vue original qui complète et enrichit les études classiques sur les zoos.

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